

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

Reserve
1-96
R31F



Federal-State Cooperative
Snow Surveys and Water Supply Forecasts
for
Rio Grande Drainage Basin

NOV 9 1956 *

U. S. DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE
AND
COLORADO AGRICULTURAL EXPERIMENT STATION

Data included in this report were obtained by the agencies named above in cooperation with the U. S. Forest Service, National Park Service, State Engineers of Colorado and New Mexico and other Federal, State and local organizations.

— AS OF —
MAY 1, 1955

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

TO RECIPIENTS OF COOPERATIVE SNOW SURVEY
AND WATER SUPPLY FORECAST REPORTS:

Forecasts by U. S. Weather Bureau of total annual streamflow October-September, inclusive, at more than 300 gaging stations are issued monthly January through May in the publication WATER SUPPLY FORECASTS FOR THE WESTERN UNITED STATES.

Weather Bureau forecasts of runoff presented in that bulletin are computed from procedures based on mathematical analysis of the relation between precipitation and runoff.

The Weather Bureau bulletins may be secured by writing to:

Hydrologist in Charge
River Forecast Center
U. S. Weather Bureau
712 Federal Office Building
Kansas City 6, Missouri

For current information on local river and flood conditions, reference should be made to the appropriate River District Office listed below:

Meteorologist in Charge.....	Pecos River in N. Mex.;
Weather Bureau Airport Station	Rio Grande and tributaries
Albuquerque, N. Mex.	at and above Elephant Butte Dam, N. Mex.

Rio Grande

FEDERAL-STATE COOPERATIVE
SNOW SURVEYS AND WATER SUPPLY FORECASTS
for
RIO GRANDE BASIN

Issued

May 9, 1955

Report Prepared By
Homer J. Stockwell, Snow Survey Leader
and
Jack N. Mashichek, Assistant Snow Survey Leader

Soil Conservation Service
and
Colorado Agricultural Experiment Station
Fort Collins, Colorado

Issued By

Kenneth W. Chalmers
State Conservationist
Soil Conservation Service

John H. Bliss
State Engineer of New Mexico
Santa Fe, New Mexico

General Series Paper No. 612
Colorado Agricultural Experiment Station



WATER SUPPLY OUTLOOK
RIO GRANDE DRAINAGE BASIN
May 1, 1955

Another year of deficient streamflow will occur on the Rio Grande and its tributaries in Colorado. Water supply will again be short in New Mexico. Snow cover is now 60 percent of normal in Colorado and has melted except for a few isolated areas at high elevations in New Mexico. Soils in irrigated areas are dry. Reservoir storage is much below the past ten-year average and slightly less than for May 1, 1954.

RIO GRANDE

The water supply outlook for the Rio Grande in Colorado is similar to that for the past two years. There was very little additional snowfall during April. Snow-cover is down to about 60 percent of normal on the Continental Divide and the low snow courses are bare. Forecasts of April-September 1955 flow are about one-half of the past ten-year average for the Rio Grande and the Alamosa and Conejos Rivers. This represents a drop in the streamflow prospects during April. These estimates of streamflow are similar to that which occurred in 1953 and 1954. Storage in irrigation reservoirs in San Luis Valley is very low and similar to May 1, 1954. Storage is less than one-half of the past ten-year average, but total reservoir capacity on the upper Rio Grande is relatively low in relation to streamflow as compared to other irrigated areas. Soils in the eastern part of the valley are extremely dry. Heavy snow on the valley floor near Monte Vista in early April has greatly improved soil moisture conditions in that area.

Along the Rio Grande in New Mexico the water supply will be extremely low again this year. Soils were dry in northern New Mexico. There was practically no snow in the mountains of New Mexico as of May 1.

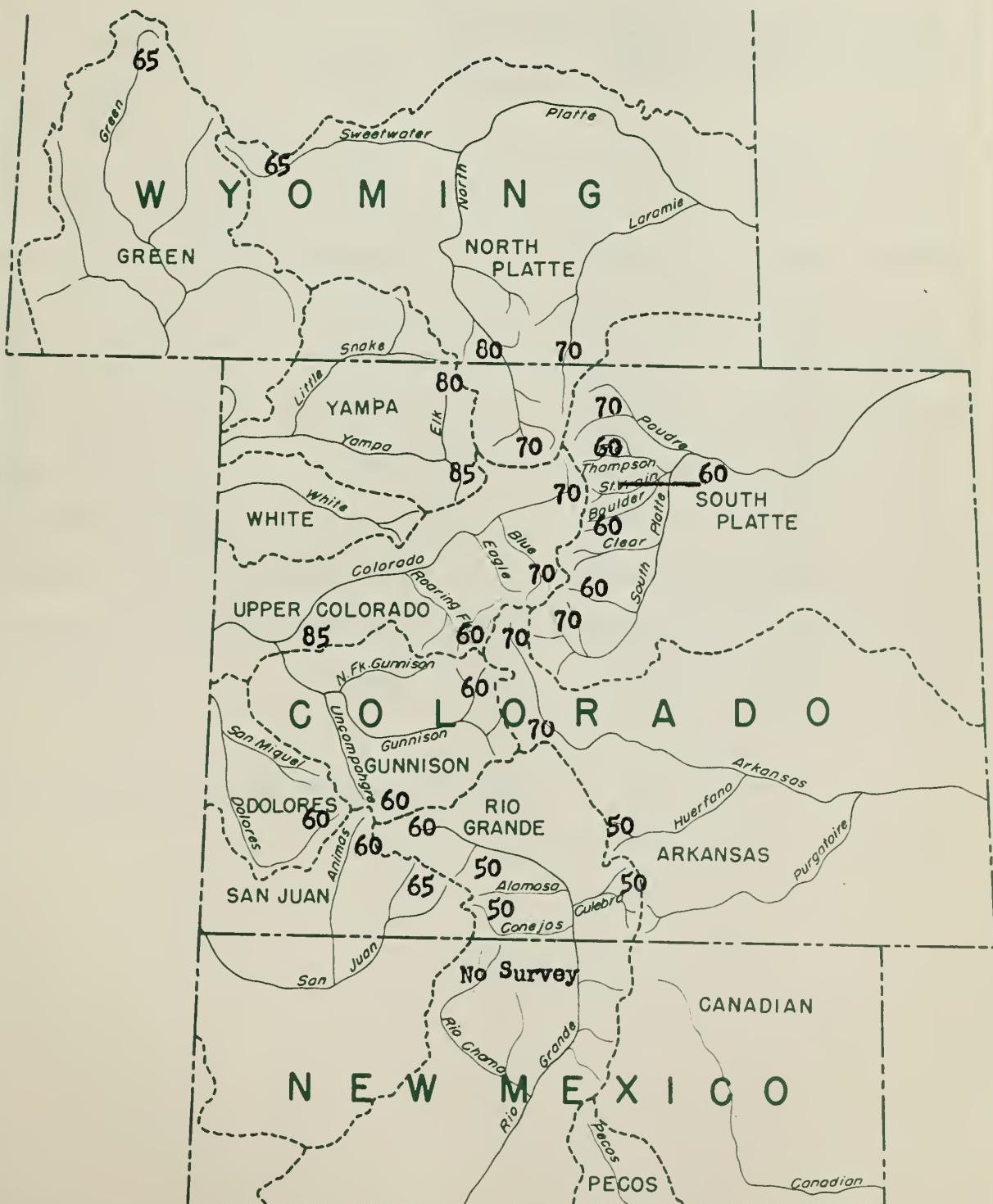
The water available in Elephant Butte and Caballo reservoirs is now about 130,000 acre-feet. This is practically the same as a year ago. Inflow to Elephant Butte is expected to be about the same in 1955 as for last year. The total of storage and expected inflow will probably not be more than one-half of the historical water demand. Extensive pumping will again be necessary. Natural streamflow below Caballo is the lowest of record. Soil in irrigation areas are dry near Las Cruces and El Paso.

There is very little snow on the headwaters of the Pecos. However, due to the flood on the Pecos River last fall, storage in Alamogordo and McMillan reservoirs is three times that of May 1, 1954 and nearly twice the past ten-year average. The water supply outlook for the Carlsbad Project is much better than along the Rio Grande. Recent rainfall has been light and soils are dry.

Carry-over storage in Conchas Reservoir for the Tucumcari Project is 130,000 acre-feet as compared to 165,000 a year ago and about one-half of the past ten-year average. Soils are dry and streamflow is below normal. There will probably be a deficiency in water available for irrigation in 1955.

WATER CONTENT OF SNOW ON THE WATERSHEDS OF
PLATTE, ARKANSAS, UPPER COLORADO AND RIO GRANDE BASINS
BASED ON SNOW SURVEYS MADE APPROXIMATELY FIRST DAY OF MONTH

In Percent of Normal
May 1, 1955



Note: The figures above are for snow water content remaining on the watersheds as of May 1 and do not necessarily represent expected streamflow. See streamflow forecasts.

RIO GRANDE DRAINAGE BASINS

STREAM FLOW FORECASTS, May 1, 1955

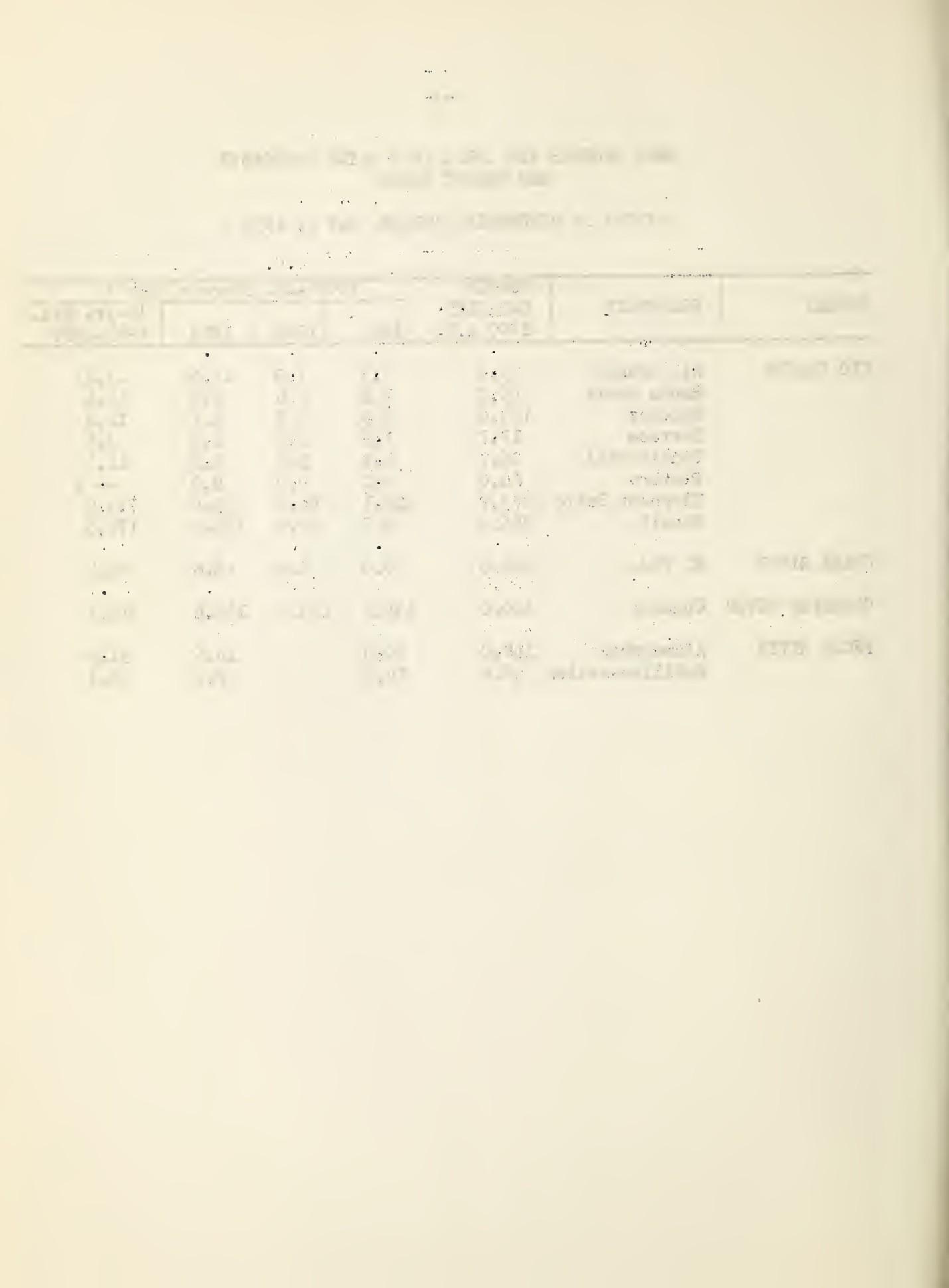
BASIN AND STREAM	Forecast 1955	April-Sept., Incl., Streamflow, Acre Feet			10-year Avg. 1943-1952
		% of 10-yr. average	Measured Runoff 1953	1952	
RIO GRANDE					
South Fork at South Fork	68,000	53	80,000	207,100	130,000
Rio Grande at Del Norte	300,000*	57	302,000*	763,000*	530,000
Alamosa above Terrace Res.	40,000	53	52,000	121,000	76,000
Conejos at Mogote	105,000	49	143,000	356,000	212,000
Culebra at San Luis	14,000	58	15,000	33,000	24,000
Rio Chama at Park View	90,000	44	114,000*	272,000*	203,000*
Costilla at Costilla	16,000	59	20,000	36,000	27,000
Embudo Creek at Dixon	25,000	51	32,000	63,000	39,000
Rio Grande at Otowi Bridge	250,000*	37	298,000*	1,167,000*	675,000*
Rio Grande at San Marcial	100,000	24	115,000*	857,000*	421,000*
Pecos at Pecos	25,000	47	41,000	74,000	53,000

*Including diversions and change in storage

SNOW SURVEYS AND IRRIGATION WATER FORECASTS
RIO GRANDE BASIN

STATUS OF RESERVOIR STORAGE, MAY 1, 1955

STREAM	RESERVOIR	USABLE CAPACITY 1000 A.F.	1000 A.F. Storage, May 1				10-yr. Avg. 1943-1952
			1955	1954	1953		
RIO GRANDE	Rio Grande	45.0	7.5	7.0	17.6	13.1	
	Santa Maria	45.0	3.4	2.8	9.9	10.4	
	Sanchez	103.0	5.9	6.3	6.7	12.2	
	Terrace	17.7	1.5	2.0	6.3	3.8	
	Continental	26.7	4.1	5.6	6.3	11.1	
	Platoro	60.0	0.0	0.0	0.0	-- *	
	Elephant Butte	2273.7	122.1	90.6	233.6	713.5	
	Caballo	356.0	8.7	32.9	133.9	172.5	
CHAMA RIVER	El Vado	226.0	0.0	0.0	16.6	91.4	
CANADIAN RIVER	Conchas	600.0	131.2	153.0	146.4	318.1	
PECOS RIVER	Alamogordo	148.0	80.0		14.5	31.9	
	McMillan-Avalon	45.0	14.6		2.9	6.7	



RIO GRANDE DRAINAGE BASIN SUMMARY OF MAY 1 SNOW SURVEYS AND
COMPARISON OF DATA WITH PREVIOUS YEARS
May 1, 1955

WATERSHEDS	No. of Courses Averaged	Years of Record	May 1, 1955 Water Contents as Percent of		
			1954	1953	Average
Rio Grande (Colo.)	22	4-19	166	104	56
Upper Rio Grande	3	16-19	480	170	57
Alamosa River	2	15-18	77	100	72
Conejos River	5	6-19	325	130	45
Culebra River	1	----	---	---	--

PRECIPITATION DATA

WATERSHED	STATE	Precipitation*	Departure	Precipitation*	Departure
		October 1 to April 30	from Normal inches	April	from Normal inches
Canadian	New Mexico	5.10	-0.42	1.15	-0.10
Rio Grande	Colorado	2.25	-2.11	1.00	-0.09
Rio Grande (N)	New Mexico	2.87	-1.62	1.36	-0.06
Rio Grande (S)	New Mexico	2.05	-0.43	0.01	-0.43
Pecos	New Mexico	4.37	-0.78	0.26	-0.64

*Average of Selected High Elevation Stations

RIO GRANDE DRAINAGE SNOW SURVEYS
May 1, 1955

Drainage Basin and Snow Course	Number	Elev.	Date of Survey	Snow Cover Measurements				
				1955		Past Record		
				Snow Depth (In.)	Water Content (In.)	Water 1954	Content (In.)	Average
RIO GRANDE IN COLORADO								
Wolf Creek Pass	6M1	10000	4/28	39	17.5	3.5	10.3	25.7
Upper Rio Grande	6M2	9350	4/29	0	0.0	0.0	0.0	1.9
Silver Lakes	6M4	9600	4/29	0	0.0	0.0	0.0	0.9
River Springs	6M5	9300	4/27	0	0.0	0.0	0.0	0.9
LaVeta Pass #2	5M1	9300	5/2	0	0.0	1.0	0.0	3.3
Summitville	6M6	11500	4/25	50	10.7	13.9	16.4	22.6
Cumbres Pass #2	6M7	10000	4/30	0	0.0	0.0	4.0	16.1
Santa Maria	6M8	9700	5/1	0	0.0	0.0	0.0	0.9
Culebra	5M3	10000	5/1	0	0.0	1.2	3.2	8.7
Ft. Garland	5M4	8200	5/1	0	0.0	0.0	0.0	0.4
Platoro	6M9	9950	4/26	21	6.8	1.2	3.8	11.3
West Conejos	6M10	9450	4/26	0	0.0	0.0	0.0	0.6
La Manga	6M11	10100	4/27	37	12.7	4.9	7.2	14.0
Pyramid	6M12	10300	4/28	6	2.1	0.0	1.1	3.8
Spr.Creek Pass	6M13	10900	4/29	9	2.5	1.0	4.3	5.8
Pool Table Mt.	6M14	10000	4/28	0	0.0	0.0	0.0	1.7
Lake Humphreys	6M15	9300	4/28	0	0.0	0.0	0.0	0.2
Cochetopa Pass	6L6	10000	4/28	0	0.0	0.0	0.0	2.0
Howardville	7M13	9800	5/1	0	0.0	0.0	3.6	5.9
Red Mt. Pass	7M15	11000	5/1	74	26.8	17.3	26.5	29.6
Porcupine	6M16	10400	4/28	13	4.1	0.0	2.7-	5.2
Wolf Creek Summit	6M17	11000	4/28	63	21.3	20.8	19.1	28.4
UPPER RIO GRANDE								
Wolf Creek Pass	6M1	10000	4/28	35	17.5	3.5	10.3	25.7
Upper Rio Grande	6M2	9350	4/29	0	0.0	0.0	0.0	1.9
Santa Maria	6M8	9700	5/1	0	0.0	0.0	0.0	0.9
ALAMOSA RIVER								
Silver Lakes	6M4	9640	4/29	0	0.0	0.0	0.0	0.9
Summitville	6M6	11500	4/25	50	10.7	13.9	16.4	22.6
CONEJOS RIVER								
River Springs	6M5	9300	4/27	0	0.0	0.0	0.0	0.9
Cumbres Pass #2	6M7	10000	4/30	0	0.0	0.0	4.0	16.1
Platoro	6M9	9950	4/26	21	6.8	1.2	3.8	11.3
West Conejos	6M10	9450	4/26	0	0.0	0.0	0.0	0.6
La Manga	6M11	10100	4/27	37	12.7	4.9	7.2	14.0
CULEBRA RIVER								
Culebra	5M3	10000	5/1	0	0.0	1.2	3.2	8.7

NS - No survey

LIST AND LOCATION OF SNOW COURSES

Platte, Arkansas, Colorado
and Rio Grande Drainages

LIST AND LOCATION OF SNOW COURSES (CONTINUED)

No.	Name	Sec.	Twp.	Rge.	Elev.	No.	Name	Sec.	Twp.	Rge.	Elev.
<u>Dolores</u>											
23 C	Rico	11	39N	11W	8700	7 A	Iron Springs	22	14N	3W	6000
24 C	Telluride	6	42N	8W	8600	15 A	Willow Ranch	16	21N	11W	5000
25 C	Lizard Head	24	41N	10W	10300						
114 C	Trout Lake	8	41N	9W	9700						
<u>Arizona (Williams)</u>											
						9 A	Chalendar	27	22N	3E	7100
						10 A	Grand Canyon	21	30N	4E	7500
						11 A	Bright Angel	34	33N	4E	8400
<u>Arizona (Lower Colorado)</u>											
<u>Green</u>											
23 W	Dutch Joe	33	31N	104W	8700						
24 W	Mulligan Park	17	35N	108W	8900						
25 W	Kendall R. S.	23	38N	110W	7900						
26 W	Loomis Park	14	37W	111W	8500	26 C	Rio Grande	4	37N	2E	10000
27 W	Snyder Basin	15	29N	114W	8040	27 C	Wolf Creek	13	40N	4W	9350
28 W	Piney La Barge	19	29N	114W	8820	47 C	Upper Rio Grande	15	36N	5E	9600
						49 C	Silver Lakes	25	33N	6E	9300
						76 C	River Springs	30	37N	4E	11500
						77 C	Summitville	17	32N	5E	10000
						80 C	Cumbres Pass	8	41N	2W	9700
11 NM	Frisco Divide	21	6S	20W	8000						
14 NM	State Line	5	6S	21W	8000						
22 NM	Taylor Creek	20	10S	10W	7850	82 C	Santa Maria				
23 NM	Inman	6	11S	10W	7800	84 C	Culebra				
1 A	Nutrioso	23	6N	30E	8500	108 C	Fort Garland	13	29N	72W	8200
2 A	Beaver Head	13	4N	30E	8000	109 C	Platoro	22	36N	4W	9950
3 A	Coronado Trail	26	5N	30E	8000	110 C	Weet Conejos	25	35N	4E	9450
29 A	Rose Canyon	15	12S	16E	7300	122 C	La-Manga	11	33N	5E	10000
30 A	Bear Wallow	6	12S	16E	8100	123 C	Pyramid	26	41N	5W	10300
						124 C	Spring Creek Pase	2	42N	3W	10900
						125 C	Pool Table Mt.	19	41N	2E	10000
						126 C	Lake Humphrey	32	40N	1E	9300
						127 C	Cochetopa Pass	12	45N	3E	10000
						154 C	Porcupine	2	41N	3W	10400
						155 C	Wolf Creek Summit	6	37N	2E	11000
<u>Arizona (Salt)</u>											
4 A	McNary	14	8N	23E	7200						
5 A	Forest Dale	2	9N	21E	6000						
6 A	Milk Ranch	28	8N	23E	7000						
20 A	Pacheta										
21 A	Fort Apache	18	7N	27E	9000	1 NM	Red River	29	28N	15E	9500
22 A	Baldy	28	7N	27E	9000	2 NM	Taos Canyon	10	25N	15E	9000
23 A	Maverick Fork	13	6N	27E	9050	4 NM	Aspen Grove	12	18N	10E	9100
31 A	Workman Creek	33	6N	14E	5860	9 NM	Hematite Park	8	28N	15E	9500
						12 NM	Tres Ritos	23	22N	13E	9000
						15 NM	Payrole	16	28N	7E	9700
						17 NM	Chama Divide				
12 A	Fort Valley	22	22N	6E	7350						
13 A	Mormon Lake	13	18N	8E	7350	18 NM	Chamita				
19 A	Mormon Mountain	14	18N	8E	7500	19 NM	Cordova	22	22N	13E	10100
						20 NM	Panohuela	27	19N	12E	8300
						21 NM	Big Tesque	17	18N	11E	10000
8 A	Camp Wood	3	16N	6W	5700	24 NM	Elk Cabin	8	18N	11E	8250
16 A	Antelope Park	29	19N	8E	7300	26 NM	Rio En Medio	8	18N	11E	10400
17 A	Casner Park	19	18N	8E	6930	28 NM	Quemazon	34	20N	5E	9300
18 A	Munds Park	7	18N	7E	6500	29 NM	Bateman	5	26N	6E	9300
						31 NM	Fenton Hill	18	19N	3W	8900

SD - South Dakota; C - Colorado; W - Wyoming; A - Arizona; NM - New Mexico

